EASE LU 20 — Technical Data

Parameter	Specification
Product identification	
Product name	LU 20
Sales designation	EASE LU 20
Product type	Exoskeleton / wearable robotic machine supporting the upper extremities during lifting and carrying of loads in industrial environments. Classified under ISO 13482 as a body-mounted, motion-assisting personal care robot of high performance.
Manufacturer	EASE – Ergonomische Assistenzsysteme GmbH, Waldtruderinger Strasse 16, 81827 Munich, Germany · info@ease-systems.de
Classification	Completely new development
Market launch	Pre-series launched 24 July 2026
Performance	
Load relief / assistance	Up to 20 kg total relief, up to 10 kg per arm
Nominal power	460 W
Electrical data	42 VDC, 460 W nominal
Support strength and speed	Adjustable in stages at the control panel, 5 support levels
System weight	< 6 kg without battery
Donning time	< 1 minute after instruction and individual fitting
Battery	Makita power-tool battery, XGT 40V max range. Battery and charger not included; runtime depends on the battery used.
Operating duration	Up to three-shift operation of 8 h each, i.e. up to 24 h/day, provided battery changes, maintenance and operating conditions are observed
Drive and construction	
Operating principle	Motorised cable system. Electromechanical actuators generate tensile forces through steel and Bowden cables. Forces are introduced at the forearms and redistributed via rigid and textile structures to shoulders, back and hips.
Back unit	Central electronics, battery interface, control unit and motors/actuators; worn close to the body on the back
Force transmission	Motors/actuators via Bowden and steel cables to the forearm rails; textile sheathing required for protection
Sensing and control	Force sensors; control unit processes user inputs, sensor data and state logic
Operation	Forearm rails with integrated control panel left and right; activation buttons switch between operating states
Safety	Emergency stop switch, reachable in any working posture
Body interface	Forearms, hands, shoulders, back, hips. Adjustment to body shape before use is mandatory. Textile system replaceable and washable.
Operating modes	
Off	System fully deactivated; actuators de-energised; no force transmission. Safe state for transport, storage, donning and doffing.
Initial mode	Start state after switch-on. System active but no assistance; components initialise.
Pause	Active state without assistance, for secondary tasks, donning, doffing and adjustment. Assistance cannot be activated. Actuators at minimum level to follow movement and keep cables taut.
Idle / free mode	Assistance can be activated; free movement between lifting and carrying, machine operation and secondary tasks. Pressing the activation buttons switches to lifting mode.
Lifting	Actuators generate supporting force in the direction of the lifting movement; relief of arms and back; force per the selected level.
Lowering	Optional, customer- and load-dependent. Reduced controlled assistance; damping; avoidance of abrupt load transfer.
Operating conditions	
Place of use	Dry indoor spaces in commercial / industrial working environments
Operating temperature	−10 °C to +40 °C
Relative humidity	Max. 80 %
Protection against water / dust	None
Explosive / hazardous areas	Not permitted unless separately assessed and approved
Maintenance	
Steel / Bowden cables	Replaced annually or after 2,000 operating hours, by the manufacturer or a certified service provider
Textile components	Replaceable and washable; replaced as required by the operator. Cleaned or washed between user changes.
Battery	Procured separately by the operator; approved models only
Opening / repair	Only by EASE or an approved service provider

EASE LU 20 — Use, Safety and Compliance

Intended use, user requirements, standards and scope of delivery

Aspect	Definition
Intended use	
Purpose	Physical support during lifting, carrying, setting down and positioning of loads in commercial and industrial environments, in particular production and logistics. The aim is to relieve arms, shoulders, back and hips and to maintain the user's performance across the working shift.
Target applications	Repeated dynamic lifting and carrying between floor level and shoulder height; material transport; order picking; parcel handling; loading and unloading; assembly of heavy components; machine feeding; repositioning and sorting.
Not intended for	Overhead work as the principal application; operation with sharp objects such as cutter knives; handling of people or other living beings; outdoor use; use in protected or hazardous areas.
User requirements and exclusions	
User group	Trained, adult, healthy professional users. Use only after mandatory training and instruction. Use at the workplace is voluntary in principle.
Excluded users	Pregnant persons and persons with pacemakers, metallic implants or comparable medical risks are excluded until medical clearance is available. In case of doubt, medical advice must be obtained.
Load precondition	Only loads that the user is permitted and able to handle safely without the exoskeleton may be handled. The exoskeleton does not replace a workplace risk assessment or ergonomic workplace design.
Workplace condition	Use only at workplaces where the activity is permissible without the exoskeleton and where no hazardous interaction arises with machines, transport equipment or confined spaces.
Working environment	Sufficient freedom of movement; clear working areas; distance to other persons; no adverse interaction with machines, transport equipment, doors, escape routes or work equipment.
Standards and compliance	
EU legal acts	Machinery Regulation (EU) 2023/1230 and Machinery Directive 2006/42/EC during the transition period; EMC Directive 2014/30/EU; RoHS 2011/65/EU; Regulation (EC) No 765/2008.
Core standards	EN ISO 13482:2014 / DIN EN ISO 13482:2014-11; EN ISO 12100; EN 60204-1; EN ISO 13849-1; ISO/TC 159 Ergonomics; ISO 18646-4; ISO 15066 as force and contact reference.
Supplementary standards	Including EN ISO 13854, EN ISO 13857, EN ISO 14120, IEC 61000-6-1 / -6-3 and others depending on the final risk assessment.
EMC / ESD testing	Passed at the first attempt, no findings, no board revision. EMC Directive 2014/30/EU; ESD per IEC 61000-4-2; EN IEC 61000-6-2 and EN IEC 61000-6-4.
CE status	See open point below.
Scope of delivery	
Mechanical / electromechanical	Back unit, guide tubes, motorised cable and Bowden system, motors/actuators, force sensors, back-length adjustment detent, guided cabling, forearm rails with integrated control panel left and right.
Operation and safety	Emergency stop switch.
Documentation	Operating manual, safety and warning instructions, maintenance and cleaning instructions.
Packaging	Cardboard transport packaging.
Not included	Battery and charger. Textile and body-contact components: shoulder straps, chest strap, hip belt / hip support, back orthosis, forearm rail padding, gloves or hand loops left and right.
Documentation and training	
Operating manual	Donning, doffing, adjustment, operating modes, status indicators, activation, emergency stop, battery insertion, cleaning, storage, transport, maintenance, troubleshooting, residual risks, warnings.
Operating instruction	Permitted and excluded activities, PPE, clearance distance, handling of hazardous machinery, emergency behaviour, user group.
Training	Mandatory training for users before first use; awareness training for supervisors and staff working in the same area.
Onboarding service	Communication in advance, onboarding event, training, support during the introduction phase, participation of all stakeholders.
Technical documentation	Risk assessment, test records, conformity documents, maintenance plan, spare and wear parts list.